

REMARKS

Claims 39-65 are pending, with claims 39, 43, 50 and 54 being independent. Claims 39, 43, 50 and 54 have been amended to remove the recitation that the energy band is shifted relative to portions of the channel region "in the vicinity of the boundary between the channel region and one of the source and drain regions," which was inadvertently added in applicant's last response. Since the current rejection indicates that this recitation was not given any consideration in making the rejection, the removal of this recitation does not raise new issues.

Claims 39-42, 50-58, 62, 64 and 65 have been rejected as being anticipated by Sanchez (U.S. Patent No. 5,583,067). Applicant again requests reconsideration and withdrawal of this rejection because Sanchez does not describe or suggest first and second pinning regions formed in the semiconductor substrate in a vicinity of a boundary between the channel region and one of the source and drain regions, wherein an energy band of each of the first and second pinning regions is shifted from that of other portions of the channel region, as recited in each of independent claims 39, 50 and 54.

While the rejection indicates that this is an operational feature, applicant respectfully disagrees. In particular, the limitation of the energy band of one region being shifted from that of another region is directed to physical properties (i.e., their relative energy bands) of the regions. As such, this is not merely an operational limitation that is unsuitable for distinguishing the structure of Sanchez.

As set forth in applicant's prior response, while the rejection asserts that the P-doped regions 42a and 42b correspond to the recited first and second pinning regions, this cannot be the case, since, as shown in Figs. 4f and 4g of Sanchez, the P-doped regions 42a and 42b are located on opposite sides of the channel region. As such, they cannot be said to be located "in a vicinity of a boundary between said channel region and one of the source and drain regions," as recited in each of amended claims 39, 50 and 54. In particular, while one of the P-doped regions is located in the vicinity of a first boundary between the channel region and the source region, the other of the P-doped regions is located in the vicinity of a second boundary between the channel region and the drain region.

The Examiner has previously indicated that different portions of the P-doped region 42a or the P-doped region 42b could correspond to the recited first and second pinning regions. However, neither the P-doped region 42a nor the P-doped region 42b has an energy band shifted from that of other portions of the channel region, as recited in each of independent claims 39, 50 and 54.

Accordingly, for at least these reasons, the rejection should be withdrawn.

Applicant notes that dependent claims 62, 64 and 65 further distinguish Sanchez in that different portions of the P-doped region 42a or the P-doped region 42b cannot be said to be separated from one another by a material of the channel region having a conductivity type which is the same as that of said source and drain regions, as recited in each of those claims.

Claims 39, 43, 50, 54 and 59-65 have been rejected as being anticipated by Shimizu (U.S. Patent No. 5,217,910). Applicant requests reconsideration and withdrawal of this rejection because Shimizu does not describe or suggest first and second pinning regions formed in the semiconductor substrate in a vicinity of a boundary between the channel region and one of the source and drain regions, wherein an energy band of each of the first and second pinning regions is shifted from that of other portions of the channel region, as recited in each of independent claims 39, 50 and 54, or first and second pinning regions formed in the semiconductor substrate in a vicinity of a boundary between the channel region and the source region, wherein an energy band of each of the first and second pinning regions is shifted from that of other portions of the channel region, as recited in independent claim 43.

While the rejection asserts that the device of Fig. 9F includes p-doped source and drain regions, that the n-doped regions 31 and 38 of Fig. 9F correspond to the recited pinning regions, and that they have opposite polarities to the source and drain regions, this is not the case. Rather, as shown in Fig. 9I and discussed at col. 10, lines 48-55, the regions 31 and 38 are part of the source and drain regions 42 and 44, and do not have opposite polarities to those regions (i.e., the regions 31, 38, 42 and 44 are all n-type regions).

Also, while the rejection indicates that regions 38 of Shimizu correspond to the first and second pinning regions, the regions 38 do not have an energy band shifted from that of other portions of the channel region in the vicinity of the boundary between the channel region and one of the source and drain regions, as recited in each of the independent claims.

Accordingly, for at least these reasons, the rejection should be withdrawn.

Applicant notes that dependent claims 62-65 further distinguish Shimizu in that different portions of the regions 38 cannot be said to be separated from one another by a material of the channel region having a conductivity type which is the same as that of said source and drain regions, as recited in each of those claims.

Claims 44-49 have been rejected as being unpatentable over Shimizu in view of Sanchez. Applicant requests reconsideration and withdrawal of this rejection because, for the reasons discussed above, Sanchez does not remedy the failure of Shimizu to describe or suggest the subject matter of the independent claims.


Applicant submits that all claims are in condition for allowance.

The fee in the amount of \$120 in payment of the one-month extension of time is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: _____

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